

Collaborative Information Portal (CIP) customer testimonial letters:

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11. Frank Seelos
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United States Department of the Interior

U.S. GEOLOGICAL SURVEY

Astrogeology Program
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April 8, 2004

NASA Software of the Year Review Panel
NASA Ames Research Center
Moffett Field, CA 94035

Re.: Consideration of Collaborative Information Portal (CIP)

Members of the NASA Software of the Year Review Panel,

I strongly endorse selection of the Collaborative Information Portal (CIP) software system for the annual NASA Software of the Year Award. By way of background, I have been a science investigator involved in operations for the Mariner 9, Viking, Voyager, Magellan, Galileo, Mars Climate Orbiter, Mars Pathfinder, Mars Global Surveyor, Cassini, Deep Space 1, and currently Mars Exploration Rover (MER) Missions. In the MER Mission I have served in a leadership role as one of the Science Operations Working Group chairs during for nearly 100 days for both Spirit and Opportunity. In my capacity on the mission I have found the CIP S/W system indispensable. During more than 30 years of experience in NASA planetary flight missions, I have seen nothing that even remotely competes with CIP in value to the science operations.

The CIP system has been crucial to the NASA MER operations at JPL in many ways. It provides instant, easily understood access to a wide variety of complex schedules, correlated in multiple shifting time bases (UTC, local solar time on Mars at either landing site, any standard time zone on Earth, for example). Schedules available include not only those of individuals or of their assigned roles (critical to keeping the science and engineering teams on duty), but also S/C sequences-as-occurring, uplink/downlink schedules (critical information on data Earth time-of-receipt), the myriad of continually shifting meetings that occur for each S/C throughout the sol or day, and many other examples.

Another component of CIP that I find invaluable is the rapid, easy access to many types of information scattered throughout the MER Project databases. This includes ready access to sequencing information as it evolves through the nighttime process. When I serve as the SUR (Science Uplink Representative, sort of the nighttime SOWG chair), I monitor the evolution of and double-check the uplink sequence development using CIP starting from the SOWG integrated sequence request, through the many phases of evolution, review, and approval, finally ending with the CAM (Command Approval Meeting) just prior to radiation to the S/C. Without CIP I would have to wade through a myriad of computer environments throughout the martian night in order to track and check the science content of the sequences. With CIP I can achieve this with a single client that is fast, efficient, and very clear in its use.

I have not even mentioned many other valuable CIP features (science data retrieval such as images, intra-team communication and bulletin boards, the ease with which data objects can be loaded into CIP by the users, the ease of remote access). In sum, CIP has undeniably made an enormous contribution to the extremely high efficiency of the science operations process and ultimately to the success of the MER itself.

Sincerely,

Laurence A. Soderblom
Research Geophysicist

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To the Software of the Year Review Team,

The purpose of this letter is to enthusiastically endorse the NASA Ames developed software known as the Collaborative Information Portal (CIP) for the software of the year award. CIP has been of tremendous benefit to the Mars Exploration Rover Flight Team during the surface operations portion of the mission, solving two different problems for our team, cross platform time visibility and cross platform data viewing.

CIP enabled us to have visibility into events happening in the time frames of the twin rovers operating on Mars local time at two different time zones, events happening on Universal Coordinated Time (UTC, replacement for Greenwich Mean Time), and finally for events happening on purely local time (PST) such as shift handovers and non-work related events. CIP also enabled us to have visibility into data products stored on our main server from any of a number of different computer types – UNIX machines, LINUX machines, PCs, and Macintoshes all were enabled as entryways into the data needed to perform our disparate functions. Whether we were sitting at a real time console monitoring engineering health data and wanted to look at images of where the rover would drive to next, or at home trying to plan arrival time at JPL for viewing the engineering data relayed by one of the Mars orbiters and also when to drop our children at school, CIP was invaluable.

I have every expectation that CIP will be used in future Mars missions, both orbiters and landers/rovers, and will become one of the standard tools here at JPL.

A handwritten signature in black ink, appearing to read 'Jim Erickson', is positioned above the typed name.

Jim Erickson
Deputy Project Manager,
Mars Exploration Rover

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Mail Stop 264-621

2004 April 8

To whom it may concern:

I am the Science Manager for the NASA/JPL Mars Exploration Rover (MER) mission that is currently operating the Spirit and Opportunity rovers on Mars. I am writing to recommend that the Collaborative Information Portal (CIP) software, used by the MER Project, be considered for the 2004 NASA Software of the Year Award.

The MER rovers are highly sophisticated robotic vehicles operating during the Martian day. Because of the complexity of commanding these two rovers every day on schedules that are not synchronized to Earth-time, maintaining and sharing tactical schedules and information that are constantly changing is critical. CIP has been the tool that allows the rover operations team to establish and update the schedules, and then communicate this information among a broadly distributed team across many time zones. CIP became the de facto schedule for the team, due to its sophistication, stability, ease of use, and compatibility with a variety of computer platforms. People learned when and where they should report each day and what's going on at any given moment on either rover with CIP. It would have been extremely difficult to conduct our challenging rover operations without it.

Therefore, I recommend that CIP be considered for the 2004 NASA Software of the Year Award.

I would be please to provide any further information regarding my recommendation.

Sincerely,

A handwritten signature in blue ink, appearing to read 'John L. Callas', is written over the typed name.

John L. Callas, Ph.D.
Science Manager
Mars Exploration Rover Project

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Mail Stop 241-105

April 11, 2004

To the Software of the Year Review Board:

CIP has been a very important tool for the science and engineering team working on the Mars Exploration Rover (MER) mission. For most of the 90-sol prime mission, the team has had to respond quickly to assess the data returned from the rovers, and to prepare an activity plan and command sequences for the rovers' next day of activity on Mars. Time was critical. Software tools like CIP, which can answer key questions quickly and efficiently, were essential to the success of the MER mission. CIP helps answer questions like: Did we get the camera image of Bounce Rock yet? What did the latest Mission/Science tag-up meeting plan say about the upcoming expected downlink rates? What are the latest APXS chemistry results? When is Person "X" going to come on shift next and where can I find him? When is the next Science Operations Working Group meeting for Opportunity, and who will be running that meeting? These may seem like "small" things, but many times, it was the small things that made a big difference in the quality of the science return of the mission, and allowed the team to always meet its deadlines for rover command cycles.

CIP was an extremely handy tool for displaying user-selectable clocks and for doing quick time conversions. This was important, because people had to make quick checks of time, for a variety of time systems (two rovers on opposite sides of Mars, in two opposite time zones (Spirit Local Solar Time and Sol (Martian day), Opportunity Local Solar Time and Sol, UTC time for Deep Space Network scheduling, and Pacific Time and date for several operations schedules). CIP was the preferred tool among team members for doing these tasks, and the color-coded graphics display was easy to read and interpret at a glance.

A second area in which CIP excelled was in allowing people to check staffing and event schedules across the two rovers. The visual display worked well, and people on the team used this feature frequently. There was no other "one-stop-shopping" and common interface for all these different project schedules. The ability to scroll forward and back in time, and to personalize which schedules were loaded made this tool very useful.

Finally, the third area in which CIP was most useful was its ability to allow users to search for files in the Operational Storage Server, and to download them in a secure fashion on a local computer without having to go through the numerous keystrokes and logins that other methods required. Again, quickness and ease of use were key in making this software tool a popular one, and very helpful for the team working on rover operations.

The software is easy to use and it has been very reliable. I have witnessed the full development of CIP from early products to the final product, and I have seen it evolve into a very easy-to-use tool that really meets the needs of its customers. I have been extremely pleased with the CIP support team and its responsiveness to my questions and suggestions (and to suggestions of other project members) over the years. This software tool has made a big difference in the success of the Mars Exploration Rover mission. For these reasons, I think that CIP software is worthy of consideration for NASA's Software of the Year award.

A handwritten signature in black ink that reads "Joy Crisp". The signature is written in a cursive, flowing style.

Dr. Joy Crisp

Mars Exploration Rover Project Scientist

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Mail Stop 264-522

April 12, 2004

To the NASA Software of the Year Review Board:

On behalf of the Mars Exploration Rover mission, I would like to acknowledge the contribution of the NASA Ames Research Center Collaborative Information Portal (CIP) team to the success of the MER surface mission.

Mars surface operations are distinctly different from operations for most robotic deep space missions. Instead of days or weeks to plan, sequence, and validate command loads, the MER team was required to operate in a reactive mode, turning around new command loads every Martian day. To accomplish this, most of the operations team lived and worked on "Mars time," with work schedules shifting forty minutes later each day to stay aligned with the rover's day. And since two rovers were being operated simultaneously on opposite sides of the planet, the team was split in half, with the two parts of the team living in different Martian time zones.

To support intense surface operations, the MER team needed mechanisms to rapidly disseminate information throughout the team, and to keep track of workshifts and personnel. The CIP tool served as a clearinghouse for key information, available instantly to each team member on every laptop and workstation. Customizable for each user, the CIP display tracked the tactical timeline, spacecraft events, communications windows, and personnel schedules. In the main sequencing support rooms, the CIP tactical timeline was continuously displayed on an electronic whiteboard. Reconfigurable clocks simultaneously showed the local times at each of the landing sites, as well as at the Jet Propulsion Laboratory and any other selected time zone. The CIP tool further provided countdowns to any selected upcoming events, and broadcast messages to the entire team. Equally important, CIP provided a window into the telemetry and sequencing data products, enabling users to rapidly locate, view, and download tactically crucial reports and images.

The MER operations team became reliant on the CIP tool almost immediately after it was deployed. The software became the primary means of coordinating the tactical operations teams for both the Spirit and Opportunity rovers.

I highly recommend this software for the software-of-the-year award.

Sincerely,

A handwritten signature in blue ink that reads "Andrew H. Mishkin".

Andrew H. Mishkin
Mars Exploration Rover MOS Development Manager
Surface Deputy Team Chief for Integrated Sequencing Team



United States Department of the Interior
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April 10, 2004

To Whom It May Concern:

I recommend with enthusiasm the nomination of the Collaborative Information Portal (CIP) for this year's "NASA Software of the Year" competition. CIP has been used extensively during the Operation Readiness Tests, nominal mission, and extended mission of the Mars Exploration Rover (MER) project. Its most useful capabilities proved to be its schedule manager tools, broadcast announcement features, and its interface with data products available on the main MER project servers. The schedule manager was used by all teams (science, engineering, management) on the MER mission to keep pace with meeting times (using a variety of Mars and Earth time zones), shift schedules, and communication windows with the spacecraft. Although this required manual input from individuals, the CIP team provided the necessary training and was always available to respond to any issue that arose with schedule maintenance (e.g., the inevitable last-minute schedule changes) or server problems. CIP's real-time broadcast announcement feature allowed team members on both rovers to send messages regarding availability of data products from the MER Athena instrument package or science results derived from those products necessary for the tactical planning process. CIP also provided a useful solution to the desire of many MER team members to transfer data products from the main MER computer operating system to their personal computers. Problems encountered with access to the UNIX computers using portable mini-disk drives ("memory sticks") often prevented data exchange to laptops, but CIP's capability to view and download data products became the preferred method for many team members. The CIP team provided excellent support both prior to launch of the MER rovers as well as during the missions. Suggestions by MER team members for additional features in CIP were prioritized and fed forward into the software development process, with new features often available only days or weeks after the initial requests were made. In short, the CIP software package and its developers provided one of the most useful tools available to the MER project and supported its usage at a professional level. Without CIP's availability during the MER mission, the ability of the MER team to perform its duties in an efficient manner would have been compromised greatly.

Sincerely,

A handwritten signature in black ink that reads "Jeffrey R. Johnson".

Dr. Jeffrey R. Johnson
Science Team Member, Mars Exploration Rover missions
U.S. Geological Survey
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April 11, 2004

To whom it may concern:

This letter is to support the nomination of the Collaborative Information Portal (CIP) software for the 2004 NASA Software of the Year Award.

The Ohio State University group is supporting the MER Science and Engineering teams by providing updated landing site maps and rover traverse positions using image and telemetry data down linked. Much of the work has been carried out at the home institution, the Ohio State University (OSU), which requires that information such as schedules, reports and image data be received, so that the mapping products and rover positions can be computed and delivered in a timely way. CIP has been working effectively and supported our mapping and localization efforts greatly. The technical support is also great. Responses from the software support team through personal contacts, phones and emails have been very promptly. CIP is a software system I have been using to perform my MER Participating Scientist role on a daily basis.

I strongly recommend the software system for 2004 NASA Software of the Year Award.

Sincerely,

Rongxing (Ron) Li, Ph.D.
MER Participating Scientist
Professor and Director
Mapping and GIS Laboratory

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April 12, 2004

Dear NASA Software Review Panel,

I am pleased to submit my support and endorsement of the Collaborative Information Portal (CIP) tool for this year's nomination of NASA's Software of the Year award. As a member of the Mars Exploration Rover (MER) Project Operations Team, I can attest to how much the tactical operation of the rover relies on the different capabilities of this tool. The basis, being the medium for communication of spacecraft and support personnel activities. Not only does CIP provide a means to communicate with the team a clear, concise, and multi time zone format, of rover communication sessions and other spacecraft critical activities, it also supports the scheduling of personnel activities in order to keep the spacecraft activity planning process flowing in a timely manner.

Though the scheduling capabilities of the tool have been exceptional, it is by far not the only, or most used feature. Every day, along with the CIP projection of the spacecraft and Mission Support Area timeline of events (via the scheduler), the CIP clock is displayed to provide the team with an accurate record of the Mars local time at each of the landing sites. Since the team operated on "Mars Time" for the greater portion of the mission, having a tool which could reliably track the martian day and provide time conversions to Earth time (UTC, Pacific, Eastern, etc.) was essential. The capability to display the different time zones as well as provide a countdown clock for specific events only enhanced the scheduling capabilities.

In addition to the features mentioned above, another highly utilized area involves file accessibility. Since the tool is a secure program, it allows the user to view or save documents off our internal secure file system without having to go through cumbersome logins and file copying steps in order to view remote documents. The graphical interface facilitates this process by copying files directly on to their desktop in one step. This is highly valuable when needing to quickly access information on flight network when not necessarily already logged in, or in front of a flight network terminal.

Documents are just the first step in accessing files using CIP. The most valuable feature in my view has been the ability to view the latest images by using the either the "Browse Files" feature, or the specialized "New Files" capability which will query images based on received time, file type, acquiring camera, or Sol (martian day) generated, just to name a few. This capability was key for when needing to log in remotely via PC when away from the lab.

The CIP software has been an enormous facilitator in our daily operation of the Mars Exploration Rovers. By exercising the capabilities within both the Science and Engineering teams we have been able to successfully communicate information back and forth with ease and efficiency thus making CIP an important asset to the project.

Sincerely,

A handwritten signature in black ink, reading 'Jessica A. Collisson'. The signature is fluid and cursive, with the first name being the most prominent.

Jessica A. Collisson
Flight Director, Mars Exploration Rover Project



United States Department of the Interior
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April 10, 2004

To Whom It May Concern:

This letter is to support the consideration of the Collaborative Information Portal (CIP) Java-based software package as a candidate for the 2004 NASA Software of the Year award. As a member of the Athena/ Mars Exploration Rovers (MER) team and an active participant in MER mission operations, I have used this program on a daily basis as a schedule keeper and collaborative database, and as a science tool. CIP allows us to meet our mission-critical obligations by helping us to visualize and track the complex tactical and operational schedules, providing information on the time and location of meetings, duty rosters for scientists and engineers, satellite communication schedules, and food service events. CIP also provides easy access to the numerous data products and reports generated each day, and it allows team members to broadcast messages quickly and easily as needed. CIP is available on virtually all mission operations workstations, and is on display in all science and engineering work areas. Off-site team members have easy access to CIP, as it is available for a variety of common Mac and PC (Linux and Windows) systems and it is simple to download, install, and run. Documentation is simple and easy to digest, and user support is fast, friendly, and very responsive. In short, CIP provides a simple user interface for the entire MER team so that collaborators can quickly share data, information, and schedules on a daily basis.

I can say without hesitation that CIP provides us with an innovative tool for managing information, and it has become a vital component to our operations for MER. I believe that CIP should be considered for this prestigious award.

Sincerely,

A handwritten signature in cursive script that reads "Lisa R. Gaddis".

Dr. Lisa R. Gaddis
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April 12, 2004

Dear Members of the NASA Software of the Year Review Panel,

I would like to strongly endorse the Mars Exploration Rover (MER) Collaborative Information Portal (CIP) for the NASA Software of the Year Award. I first learned of the CIP tool and met the CIP developers when they made an early presentation to the MER ground data system developers, a likely core-set of their potential users. The presentation was made quite literally with pen and paper, using colored markers on a large pad propped on an easel. CIP as it was proposed at the time appeared to the casual user to be simply a set of panels that were convenient for displaying a number of different clocks simultaneously. What eventually evolved was the most valuable tool available to all MER operations users.

Though I first saw CIP when I was a subsystem engineer, during MER surface operations I served as a liaison between the science and engineering teams, a position that required me to move from room-to-room and floor-to-floor to attend meetings while handling data issues with users. I could not have completed my job as successfully without CIP's ability to convey all this information, portably, and across multiple operating systems.

With CIP on my laptop, I can move easily from location to location without losing crucial information about Mars time, Earth time (in multiple time zones), staffing of key positions, and meeting schedules. Almost as importantly, CIP allows me to drill down into the MER operational database, allowing me to access data and image files on my laptop without having to stop and find an available desktop workstation. It was also important to know that if I was already using a workstation, I could access CIP under Linux, Solaris or MacOSX.

My continuing daily usage of CIP includes display of local time, UTC and time at both Mars landing sites, and a waterfall schedule of daily meetings and communications sessions with the rovers, with specific meetings and sessions called out and highlighted as their start-time approaches. This display is kept on throughout the day for instant reference, as needed. When working on Mars time, this was often the only way to coordinate my responsibilities. Almost as importantly, when my responsibilities for the day were done, CIP was used to determine what Earth-time I had to return the next day.

In addition, I use CIP's file browsing capabilities to access data files I need to come up to speed on overnight activities, to monitor data updates throughout the work-day, and to prepare my end-of-sol (Martian day) reports.

Though it's easy to provide a laundry list of a tool's capabilities and ease-of-use, this does not necessarily make explicit the development's team commitment to making a tool that can leap off a paper pad and becomes a key part of mission operations. From the time I saw their first scribbles, the CIP developers have been conscientious about polling

users' needs and requirements and responding accordingly. This diligence continued into operations, where testing ends and actual use of the package begins. As users began to increasingly rely on CIP, they found things that could be added or improved upon, as happens with all software. Virtually every change that could be accommodated during operations was added during operations. This continual improvement based on user responses made a great tool better and reflects positively on the skill and attentiveness of the CIP team.

I know of no other tool which could provide what CIP has for MER. Moreover, I can easily foresee CIP adapting to meet future mission-specific requirements and becoming a standard part of the NASA mission operations toolkit. That's a testament to CIP's flexibility, portability, ease-of-use, and data content, and to the developers who helped sculpt it.

Sincerely,

A handwritten signature in black ink, appearing to read 'Craig Leff', written in a cursive style.

Craig Leff
MER Science Operations Support Team Downlink Coordinator
Jet Propulsion Laboratory

April 13, 2004

NASA Software of the Year Competition

To whom it may concern,

I am writing to endorse the nomination of the Mars Exploration Rover (MER) Collaborative Information Portal (CIP) in the NASA software of the year competition. Throughout MER mission surface operations CIP has been one of the few software tools utilized by virtually all members of the science and engineering teams. The integration of multiple information access capabilities into a single application with an intuitive interface and consistent cross-platform functionality makes CIP an invaluable tool in tactical and strategic operational activities.

The most impressive aspect of the CIP software is the elegant implementation of multiple mission critical timelines. During the MER primary mission the science and engineering teams operated on a Mars Hybrid Local Solar Time (HLST) schedule. This time standard differs from the UTC time standard by approximately 40 minutes a day, resulting in a constant drift of the tactical operations schedule through the Earth day. The CIP schedule manager precisely tracks this time standard disparity and provides an unambiguous visual representation of all scheduled activities.

As MER surface operations transition into the extend mission phase CIP continues to be fundamental to operational timeline management and information access. It is without reservation that I recommend CIP for the NASA software of the year award.

Sincerely,

Frank Seelos
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